

A NEW APHID OF THE GENUS MINDARUS FROM WHITE
FIR IN BRITISH COLUMBIA

(Homoptera, Aphididæ)

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This species was collected on the undersides of the young, tender tips of grand fir or white fir, *Abies grandis* Lindley, growing along "The Gorge" just back of The Gorge Hotel in the City of Victoria, British Columbia, on June 7, 1938. The two trees infested were quite young and not over 20 feet tall. They were growing in the woods on the bank and were quite shaded by larger coniferous trees. My attention was attracted by the copious covering of honeydew on and under the infested trees and by the buzzing of insects feeding upon it. The flocculent aphids were crowded on the undersides of the needles with very little noticeable curling or deformation of the latter at the time. The material was gathered in a paper bag, and the specimens later removed to vials of 80 per cent alcohol. In making the transfer I noticed the four distinct forms: the alate and apterous parthenogenetic females, the apterous oviparous females, and the minute dusky-looking males. The shining black eggs, slightly covered with wax, were also quite abundant. Although many other trees in the vicinity were examined, no additional specimens were collected. However, I thought the species was *Mindarus abietinus* Koch and therefore made no special attempt to observe the habits of those collected or to find other colonies.

Mindarus victoria Essig, new species

Color. All forms, excepting the males, are a soft jade-green color which is hidden by heavy white waxy pulverulence or cottony secretions. The winged forms are characteristically dusky or black, including much of the head and thoracic regions and the rostrum, antennæ, legs, wing veins, three to five dorsal transverse abdominal vittæ, tip of the cornicles, and anal plate. In the cleared apterous parthenogenetic females the front of the head, portions of the antennæ, the legs, and glandular areas are faintly dusky.

The sexual females appear very much like the apterous parthenogenetic females with the additional circular pigmented areas between the cornicles which, in life, bear many closely clustered glass-like wax rods.

The cleared males appear to be largely dusky throughout, with transparent cross-lines between the abdominal segments.

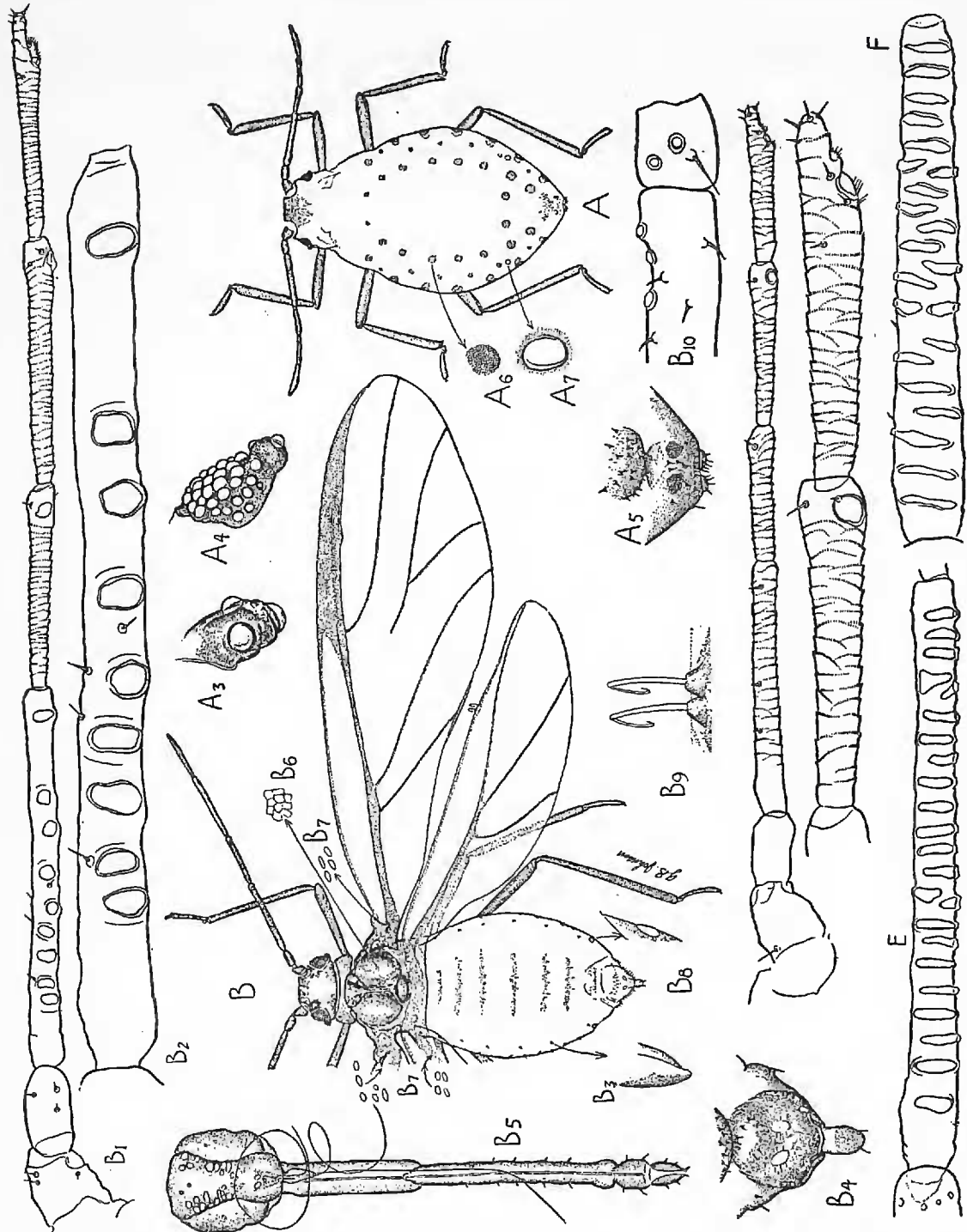


Fig. 1. *Mindarus victoria* Essig, n. sp. A, apterous viviparous female: A1, antenna; A2, segments V and VI of antenna further enlarged; A3, ocellanae found in some individuals; A4, compound eye; A5, posterior abdominal region showing anal and genital areas and two groups of glands; A6, single wax glandular area greatly enlarged; A7, cornicle. B, winged viviparous female: B1, antenna; B2, antennal segment III; B3, abdominal tubercle; B4, ventral aspect of posterior abdominal region showing cauda, anal plate with two transparent circular areas, and portion of the genital plate; B5, rostrum; B6, reticulated derm of thoracic region; B7, fenestras at bases of subcostal veins; B8, cornicle; B9, hamuli or wing hooks, B10, sensoria on trochanter and at base of femur. E, *Mindarus abietinus* Koch: antennal segment III of the winged viviparous female. F, *Mindarus japonicus* Takahashi: antennal segment III of the winged viviparous female.

Winged viviparous female. Pulverulent or wholly covered with white cottony wax, jade-green with the head and thorax and their appendages, wing veins, tips of the cornicles, anal plate, genital plate, and abdominal vittæ dusky or black. Antennæ slightly more than half the length of the body; lengths of segments: I, 0.10 mm.; II, 0.10 mm.; III, 0.42 mm.; IV, 0.22 mm.; V, 0.27 mm.; VI, 0.25 mm. (base, 0.20 mm.; unguis, 0.05 mm.); total 1.36 mm. There is a wide range in the measurements of the different individuals examined. Large, nearly circular secondary sensoria occur on segments III and IV. On III there are from six to twelve with an average of eight or nine distributed throughout the length excepting the base. On IV there is normally but one large apical sensorium similar to the primary one on V. Only a few inconspicuous setæ are present. The rostrum is long and slender with the apical segments rather short and broad. It extends nearly to the third coxæ and averages 8 to 9 mm. in length. The cornicles are very short and little more than rings. Usually there are two sensoria on the trochanters and a row of three on the inner basal margin of the femora. The tarsi are conspicuously large and appear subequal on all the legs. Segment II is about eight times as long as I; total length to the bases of the claws is 0.23 mm. There is, on each side of the body, a row of small tubercles. The cauda is broad at the base and somewhat knobbed apically with the basal area transparent. There are a few short inconspicuous hairs present. The anal plate is nearly circular; pigmented with the exception of two large circular transparent areas, each of which has a single central seta. It is also beset with a considerable number of small setæ arising from nearly globular tubercles. The genital plate is elongated and also armed with a few setæ like those on the anal plate. Length of the body, 2.5 mm., width 0.9 mm.; length of forewing, 3.2 mm., width, 1.2 mm.

Apterous viviparous female. Pulverulent or waxy over jade green; the appendages being dusky or somewhat amber-colored. In most forms the eyes are compound but several mature individuals were noted which had only the two groups of three ocellanæ each as in the sexual forms. Lengths of the antennal segments: I, 0.09 mm.; II, 0.09 mm.; III 0.35 mm.; IV, 0.18 mm.; V, 0.18 mm.; VI, 0.21 mm. (base, 0.17 mm.; unguis, 0.04 mm.); total, 1.10 mm. There are no secondary sensoria present and but few inconspicuous setæ. Rostrum similar to that of the winged form. Cleared specimens reveal a considerable number of circular, wax glandular areas variable in size and arranged in a longitudinal marginal and submarginal row on each side with two extra areas between the cornicles. The marginal and the posterior submarginal areas are largest. Cornicles mere rings. The cauda appears to be incompletely developed or absent—the abdomen simply rounds off posteriorly. The anal and genital plates are similar to those of the alate form.

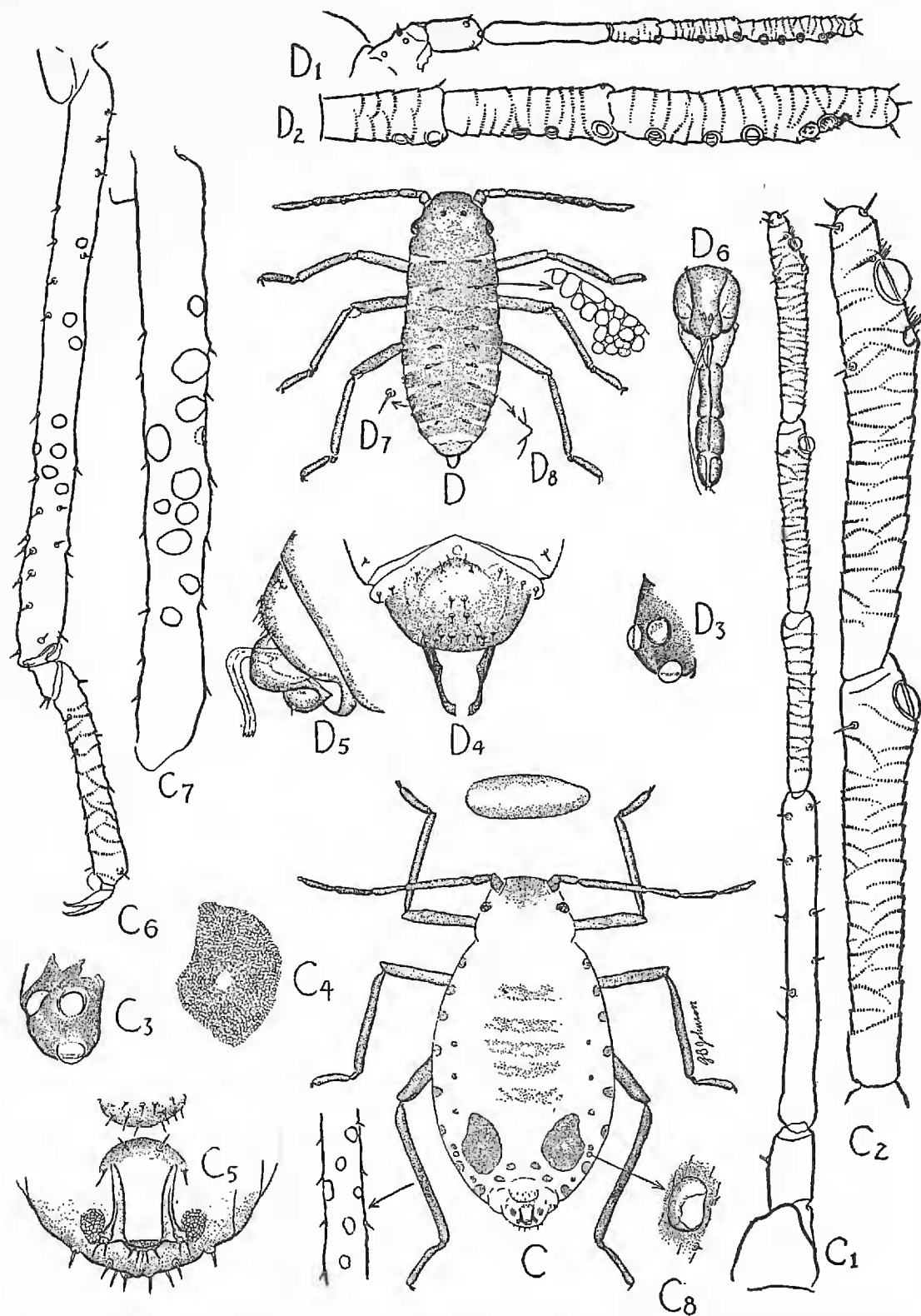


Fig. 2. *Mindarus victoria* Essig, n. sp. C, adult sexual female: C1, antenna; C2, segments V and VI of antenna; C3, group of ocellanæ; C4, one of the two large wax glandular areas between the cornicles; C5, anal area showing modified cauda, anal plate, genital plate, and wax glandular areas; C6, hind tibia and tarsus; C7, hind tibia of another individual; C8, cornicle. D, male: D1, antenna; D2, antennal segments IV to VI showing sensoria; D3, group of ocellanæ; D4, ventral aspect of anal area showing claspers, anal plate, and genital plate; D5, lateral view of anal area showing the exserted penis; D6, rostrum; D7, lateral body spine; D8, lateral body tubercle. (All drawings by aid of U. S. Works Progress Administration under supervision of author.)

Sexual oviparous female. Apterous and similar in form to the apterous viviparous female but considerably smaller in size and somewhat more yellow in color. The groups of glassy-wax rods between the cornicles and the smaller size of the bodies at once separate them in life, and the simple eyes, the large glandular areas from which the wax rods are secreted, the cleared sensoria-like areas on the hind tibiae, and the small "u"-shaped chitinized caudal area at once distinguish the cleared, mounted specimens. The color is greenish-yellow with head and appendages dusky and a series of five or six dusky vittæ on the dorsum. The body has the two rows of oval or circular, glandular areas similar to those of the apterous viviparous forms. The anal and genital plates are not definitely pigmented but support similar setæ. The glandular patches between the cornicles are sometimes very large and indefinite in form. They each have a small clear circular area in the center. The eyes are each composed of three ocellanæ. Lengths of the antennal segments: I, 0.05 mm.; II, 0.06 mm.; III, 0.22 mm.; IV, 0.11 mm.; V, 0.13 mm.; VI, 0.15 mm. (base, 0.13 mm.; unguis, 0.02 mm.); total, 0.72 mm. There are no secondary sensoria present. The cauda is not distinct, if present at all. It is represented by a chitinized "u"-shaped area that, in some specimens, appears to define a cauda. Length quite variable—from 1.30 to 2.00 mm.

Male. Minute, dusky throughout and very inconspicuous. There are two longitudinal rows of groups of wax glands on the dorsum. Eyes are composed of three ocellanæ each. Antennæ about half the length of the body; lengths of segments: I, 0.05 mm.; II, 0.05 mm.; III, 0.10 mm.; IV, 0.05 mm.; V, 0.07 mm.; VI, 0.11 mm. (base 0.09 mm.; unguis 0.02 mm.); total 0.43 mm. Large and small circular secondary sensoria are distributed as follows: IV, 0 to 2; V, 1 to 3; VII, 2 to 3. Although there are certain light areas on III, they do not appear to be true sensoria. The rostrum extends beyond the hind coxæ and is similar in shape to the other forms. The hind tibiae are not enlarged, but the margins are sometimes a little irregular because of the presence of the rather large oval or circular sensoria-like areas which number from 4 to 8. Other anatomical features are shown in the accompanying drawings in Figure 2.

Eggs. Regularly elongate-oval, shining black, and covered with waxy pulverulence and threads; length 0.65 mm. Laid on the undersides of the needles.

Type. A single alate viviparous female is designated as a type in the author's collection. A large series of slides of all the various forms described and taken from the original host and consisting of several hundred individuals are designated as paratypes. These are mounted on 31 slides in Canada balsam and 4 slides in a modified Berlese mounting medium. All are in the author's collection.

There are now four species referable to this genus: *Mindarus abietinus* Koch, *M. obliquus* Cholodkovsky (= *Schizoneura obliqua*), *M. japonicus* Takahashi, and *M. victoria* Essig, n. sp. The latter differs from all the others in the fewer and more circular sensoria on antennal segment III of the winged viviparous female as shown in the accompanying illustrations in Figure 1, B1, B2, E, and F. Cholodkovsky's¹ drawing of *obliqua* shows thirteen oval sensoria scattered over most of the length of the segment. He also shows three small sensoria on segment IV of the alate form instead of none or one as in the other species.

In *abietinus*² there are from fourteen to twenty-four and in *japonicus*³ from nineteen to twenty-three elongated sensoria on segment III of the alate form. In the latter species there is a tendency for some of the sensoria to be shorter and staggered along the segment. Specimens of *abietinus* from Maine, received through Dr. E. M. Patch, show a more circular type than those from Europe or from California.

¹ Zoöl. Anz., XIX, p. 256, 1896.

² Die Pflanzenlaus, p. 278, figs. 350, 351, 1857.

³ Trans. Nat. Hist. Soc. Formosa, vol. XXI, pp. 137-139, figs. 1-2, 1931.

NOTES ON THE GENUS *AMBLYCHEILA*

(Coleoptera-Cicindelidæ)

Recent collections from Arizona and Southern California have yielded several specimens of this very rare and desirable genus and it seems appropriate at this time to present this additional data in order to aid future collectors who may be in the vicinity of the localities cited. Mr. R. P. Allen collected four female specimens of *Amblycheila picolominii* Rche. 20 miles east of Tuba City, Arizona, July 28, 1937, at dusk, in dry, open, rocky country. Mr. Thomas Rodgers collected one small female of the very rare *Amblycheila schwarzi* W. H. in Cedar Canyon, Providence Mountains, San Bernardino County, California, June 1, 1938, in a dry, sandy wash. This locality is approximately 150 miles southeast of the only other reported California locality which is Skidoo, Inyo County, California. The specimen was presented by Mr. D. F. Tillotsen, to whom the author is indebted for this fine addition.—Mont. A. Cazier.